PATENT                                                                                    · NC 95,919

## AMENDMENTS TO THE CLAIMS:

1. (Currently Amended) A portable maritime scoring and simulation system, comprising:

at least ~~three~~ four buoys placed in a body of water;

a global positioning satellite (GPS) receiver attached to each buoy to provide a GPS location of the buoys;

an radio frequency (RF) radio system attached to said each buoy;

an acoustic analysis system attached to said each buoy to capture an acoustic signature of ordnance impacting the water;

a microprocessor attached to said each buoy, wherein the microprocessor monitors and controls the GPS receiver, the RF radio system, and the acoustic analysis system;

a system controller to control and monitor the microprocessor; and,

an RF radio repeater system linking the RF radio system with the system controller,

wherein when the acoustic signature is captured by the acoustic analysis system, the RF radio system transmits a time of capture and the GPS location of said each buoy to the system controller through the RF radio repeater system,

wherein when said at least ~~three~~ four buoys transmit the acoustic signature, which is captured, the system controller computes a location of impact using a location process, and

wherein the location process comprises a calculated accumulated error computed by summing residuals, each of said residuals is an output generated from a calculated impact location and said GPS location of said each buoy ~~entered into an equation for said acoustic analysis system of each said buoy where an output is a residual for said equation~~.

2

2. (Previously Presented) The system of claim 1, further comprising five buoys.

3. (Original) The system of claim 2, wherein the five buoys comprise locations in a substantially pentagonal shape.

4. (Previously Presented) The system of claim 1, wherein the location process comprises a derived non-linear equation for an unknown vertical position within a two dimensional plane, an unknown horizontal position within the two dimensional plane, and an unknown time of the impact N-simultaneous equations solved for the unknowns.

5. (Currently Amended) The system of claim [4] 1, wherein the location process employs a least squares method.

6. (Currently Amended) The system of claim 1, further comprising an automated capability for the system controller to determine the GPS location of the buoys with respect to a ship for buoy recovery,

    wherein the RF repeater system marks the position of the ship for range and bearing calculations to the buoys.

7. (Currently Amended) The system of claim [4] 1, wherein the calculated accumulated error comprises a calculation of accumulated error in determining an ordnance impact location in relation to each said acoustic signature, which is captured.

3

PATENT                                                                                    NC 95,919

8. (Original) The system of claim 1, wherein the RF radio repeater system comprises a

digital signal processor, an RF radio, a GPS receiver, and a microphone.


9. (Currently Amended) A method of controlling ~~the~~ a portable maritime scoring and

simulation system, comprising:

commanding ~~the~~ buoys to report acoustic signature captures;

selecting a fire mission type;

entering fire mission data;

waiting for messages from the buoys regarding the acoustic signature captures;

calculating through a system controller and an acoustic analysis system an impact

location from the acoustic signature captures using a location process;

updating the fire mission data with the impact location;

determining a requirement of the fire mission type for further impacts and returning the

portable maritime scoring and simulation system to a ready state, otherwise ending ~~the~~ a fire

mission; and,

recovering the buoys when the portable maritime scoring and simulation system use is

completed,

wherein when an acoustic signature is captured by said acoustic analysis

system, an RF radio system transmits a time of capture and a GPS location of each of said buoys

to the system controller through an RF radio repeater system, and

wherein the location process comprises a calculated accumulated error computed

by summing residuals, each of said residuals is an output generated from a calculated impact

location and said GPS location of each of said buoys ~~using real-time data entered into an~~

4

PATENT                                                              NC 95,919

~~equation for said acoustic analysis system of each said buoy where an output is a residual for~~

~~said equation.~~

10. (Previously Presented) The method of claim 9, further comprising selecting live or simulation communication with the buoys before arming the buoys.

11. (Currently Amended) The method of claim 9, further comprising loading and displaying a combat chart on a system controller display; and,

entering buoy identification numbers for each ~~buoy~~ of the buoys to facilitate radio communication between the buoys and the system controller.

12. (Previously Presented) The method of claim 9, further comprising displaying buoy positions on a combat chart to graphically depict buoy locations.

13. (Currently Amended) The method of claim 9, wherein calculating the calculated impact location includes messages received from at least ~~three~~ four buoys indicating an impact; linear approximation equations are derived for two-dimensional location and time variables for each ~~buoy~~ of the buoys, which sends a message; and, the linear approximation equations are solved.

14. (Previously Presented) The method of claim 9, wherein said messages are received from more than three buoys.

5

PATENT                                                                    NC 95,919

15. (Previously Presented) The method of claim 13, wherein the linear approximation equations are solved by a least squares method.

16. (Currently Amended) The method of claim ~~9~~ 13, wherein ~~said equation comprises a linear approximation equation,~~ said accumulated error is calculated using each of the linear approximation equations.

17. (Currently Amended) The method of claim 9, wherein ~~the~~ said recovering the buoys includes the system controller calculates a distance and position of each ~~buoy~~ of the buoys from a ~~ship~~ vessel.

6